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Return to Work After Early-stage Breast Cancer: A Cohort Study into the Effects of Treatment and Cancer-related Symptoms

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Abstract *Introduction* Earlier diagnosis and better treatment have increased the survival rates of cancer patients. This warrants research on return to work of cancer survivors. What is the return to work rate following early-stage breast cancer? What is the effect of the type of treatment and cancer-related symptoms on return to work? *Methods* Our occupational health department registers sickness absence of about 50,000 employees. In the period 2001–2005 we counted 154 cases of newly diagnosed breast cancer of which 72 were eligible for analysis. In these women, return to work was followed for 24 months after diagnosis and linked to the type of treatment and cancer-related symptoms. *Results* The mean duration of absence with early-stage breast cancer was 11.4 ± 5.5 months; 35% of patients were absent longer than one year and 4 patients did not return to work within two years after diagnosis. The duration of absence depended on the type of treatment and was significantly longer in patients who underwent chemotherapy (hazard rate [HR] = 0.31; 95% confidence interval [CI] = 0.12–0.81) or multimodal treatment (HR = 0.24; 95% CI = 0.10–0.54). Women started working about 4 months after the end of therapy irrespective of the type of treatment. At that moment,

reaching above shoulder level was impaired in 11 patients (15%) which significantly delayed partial return to work (HR = 0.48; 95% CI = 0.23–0.98) but not full return to work (HR = 0.63; 95% CI = 0.31–1.26). Fatigue was reported by 9 patients (13%) and neither postponed partial return to work nor full return to work. *Conclusions* The time taken to return to work after early-stage breast cancer was principally determined by the type of treatment.

Keywords Breast cancer · Absence duration · Treatment · Cancer-related symptoms · Return to work

Introduction

Breast cancer is the most prevalent type of cancer in the Netherlands constituting about 33% of all newly diagnosed cancer cases in women. In 2003 the incidence was 123.5 per 100,000 women. Breast cancer is commonly treated by various combinations of (breast conserving or radical) surgery, radiation therapy, chemotherapy, and hormone therapy. The selection of treatment depends on the age and menopausal status of the patient, as well as the stage of the disease, histologic and nuclear grade of the primary tumor, estrogen-receptor (ER) and progesterone-receptor (PR) status, measures of proliferative capacity, and HER2/neu gene amplification. Most women are diagnosed when they are still of working age and have an early-stage disease that has good prognosis given the improvement in breast cancer treatment.

The increased survival rates warrant attention for return to work of breast patients [1–3]. Return to work can be regarded as social recovery and adds to the survivors' quality of life [4, 5]. Disease-related, person-related, and work-related factors influence return to work after cancer.

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Cancer type and treatment determine the likelihood of returning to work [6, 7]. Personal sociodemographic characteristics, such as age, gender, education, income, and marital status, were not found to be associated with return to work of cancer survivors [8]. A changed attitude of patients towards work reflecting reduced importance and a decrease in work aspirations, was negatively associated with return to work after cancer [9]. One fifth of cancer patients who returned to work reported deterioration in their job satisfaction and career prospects [10]. Manual work and work demanding physical efforts were also negatively associated with return to work of cancer survivors [8]. In contrast, social support and a supportive work environment facilitated return to work [8–11]. Discretion over work hours and amount of work were also positively associated with return to work of cancer survivors [12].

Cancer-related symptoms perceived by patients might affect work resumption. The most common breast cancer-related symptoms are therapy side effects, arm symptoms, fatigue, breast symptoms, and sleep disturbance [13]. Shoulder function impairment is a common complication after axillary lymph node dissection [14]. Lymphedema is an infrequent but potentially severe long-term complication of axillary lymph node dissection [15]. Fatigue is one of the best known cancer-related symptoms, debilitating daily activities for a long time following diagnosis [16]. Fatigue has been reported to have the greatest impact on the quality of life of cancer survivors [17, 18]. Spelten et al. reported that fatigue at 6 months predicted longer sick-leave in a sample of 235 patients suffering different types of cancer [19]. The present study investigated whether treatment and cancer-related symptoms interfered with return to work after early-stage (i.e., stage 0 through II) breast cancer. Two research questions will be addressed:

- (i) What is the return to work rate following early-stage breast cancer?
- (ii) What is the effect of the type of treatment and cancer-related symptoms on return to work?

Method

Our occupational health department registers sickness absence data and diagnostic codes of on average 50,000 employees working in four north-eastern provinces (Groningen, Friesland, Drenthe, and Overijssel) of the Netherlands. In the period January 2001 through December 2005, our registration system counted 154 cases of newly diagnosed breast cancer. Forty-one of these patients were excluded because their medical data were not available anymore, as their employer ended the association with our occupational health service. The inclusion criteria for the remaining 113 patients were:

- Age 18 to 65 years
- Employed
- Newly diagnosed breast cancer
- Early stage (stage 0, I or II) breast cancer
- No pre-existent chronic disease

Investigation of the medical files showed that 23 patients had more advanced disease (stage III or IV) and 7 patients suffered from recurrent tumours. Of the remaining 83 patients with early-stage breast cancer, 11 were excluded because they had a pre-existent chronic disease which might influence return to work. From the medical files of the remaining 72 patients, we retrieved the type and duration of treatment. All patients underwent surgery. According to the post-operative treatment, four groups were distinguished: no adjuvant therapy ($n = 11$); locoregional radiotherapy ($n = 18$); systemic chemotherapy ($n = 9$); and multimodal treatment ($n = 32$) including chemotherapy and radiotherapy. In 2 patients the type of post-operative treatment was not documented in the medical file.

From the medical files, we also retrieved cancer-related arm symptoms (shoulder function impairment and lymphedema) recognized by the occupational physician, and fatigue mentioned by the patients at the start of return to work. Some, but not all occupational physicians measured the range of motion of the shoulder to quantify function impairment. None of the occupational physicians used instruments to quantify lymphedema or fatigue. Therefore, we assessed cancer-related symptoms dichotomously as being present (i.e., documented in the medical file) or absent (i.e., not documented in the medical file).

The period between the first day of sick-leave and both partial return to work (defined as working part of the contracted hours per week) and full return to work (defined as working the normal contracted hours per week) was calculated in months. Although measurement in months is quite imprecise, it facilitates the comparison of our results with those of other studies on return to work after cancer.

Cox regression analysis was used to predict the duration until (partial) return to work from a model including age (entered as numerical data), type of treatment (entered as categorical data relative to the group without adjuvant treatment), and cancer-related symptoms (entered as categorical data relative to the group without cancer-related symptoms). Cox regression analysis produces hazard ratios (HR) representing the effect of the prognostic variable on the hazard or risk of an event. A HR <1 expresses a prolonged duration until (partial) return to work, and a HR >1 a shorter duration. The Wald-statistic is a measure for the relative influence of the prognostic factor on (partial) return to work.

Ethical approval was sought from the Medical Ethics Committee of the University Medical Center Groningen, who advised that ethical approval was not required.

Results

The data of 72 patients with early-stage breast cancer were eligible for analysis. They were older than the excluded patients and had less contracted hours/week, but were employed for a longer period of time (Table 1). The marital status did not differ between included patients and excluded patients. Among the excluded patients were more employees who worked as cleaners; this can be explained by the fact that a cleaning company ended the association with our occupational health service in 2003. The excluded patients were also longer absent (20.3 ± 5.6 months) than those who were included (11.4 ± 5.5 months).

Of the included patients, 25 (35%) were absent longer than 1 year and 4 (6%) did not return to work within 2 years after diagnosis. All included patients underwent surgery in the first month of sick-leave; axillary lymph node dissection was performed in 41 patients (57%). The period of time between surgery and return to work in patients without adjuvant treatment was not shorter than the period of time between the end of adjuvant therapy and return to work, as is shown in Table 2.

Of the patients who did not receive adjuvant therapy 9% was absent longer than one year and everybody returned to work within two years after diagnosis. Eighteen patients underwent locoregional radiotherapy and 3 of them were absent longer than one year. Nine patients underwent systemic chemotherapy; 2 of them were absent longer than one year and 1 patient did not return to work within two years after diagnosis. Most patients ($n = 32$) received multimodal treatment; 18 of them were absent longer than

one year and 3 patients did not return to work within two years after diagnosis.

Cancer-related symptoms were documented by the occupational physician at the moment of return to work. Reaching above shoulder level was impaired in 11 patients. They started working about 2 months later than patients without impairments (Table 2), although full return to work was not delayed relative to patients without impairments as is shown in Table 3.

Lymphedema was observed in 1 patient and therefore this cancer-related symptom was not included in the multivariate regression analysis. Fatigue was reported by 9 patients but did not postpone return to work (Table 3).

Table 3 shows that the age of women was not related to return to work. The high Wald-statistic showed the type of treatment to be an important determinant of return to work. Both chemotherapy and multimodal treatment delayed return to work significantly relative to patients who did not receive adjuvant treatment. However, multimodal treatment postponed return to work more than systemic chemotherapy did. Cancer-related symptoms had little effect on return to work as is reflected in the low Wald-statistics. Impaired shoulder function significantly delayed partial return to work but not full return to work.

Discussion

The mean duration of sickness absence with early stage breast cancer was 11.4 ± 5.5 months. About 35% of patients was absent longer than one year and 6% of patients

Table 1 Patient characteristics

	Included	Excluded	Total
N (row%)	72 (47%)	82 (53%)	154
Age at diagnosis (years)	49.2 ± 7.0	41.9 ± 10.0	46.2 ± 9.1
Marital status (number and row%)			
Single	17 (50%)	17 (50%)	34
Married	41 (43%)	55 (57%)	96
Divorced	14 (58%)	10 (42%)	24
Contracted hours per week (hours)	25.4 ± 13.5	31.0 ± 10.9	27.6 ± 12.8
Duration of employment (years)	14.3 ± 11.2	9.2 ± 8.4	12.2 ± 10.4
Occupation (number and row%)			
Health care	24 (44%)	30 (56%)	54
Postal services	13 (59%)	9 (41%)	22
Front-office services	9 (47%)	10 (53%)	19
Cleaning	3 (20%)	12 (80%)	15
Administrative	5 (42%)	7 (58%)	12
Shop assistants	6 (60%)	4 (40%)	10
Other	6 (55%)	5 (45%)	11
Missing	6 (55%)	5 (45%)	11
Duration of absence (months)	11.4 ± 5.5	20.3 ± 5.6	16.8 ± 5.5

Characteristics of 154 patients with newly diagnosed breast-cancer between January 2001 and December 2005 in a population of about 50,000 employees. Results are presented either as number (N) with row percentages (row%) or as mean \pm standard deviation

Table 2 Univariate analysis of return to work following early-stage breast cancer

	<i>N</i>	Age at diagnosis (years)	Duration of treatment (months)	Latent time (months)	Partial RtW (months ^a)	Full RtW (months ^a)
Type of treatment						
No adjuvant treatment	11	51.1 ± 7.8	1.4 ± 1.1	4.7 ± 5.4	5.9 ± 5.1	7.2 ± 5.2
Locoregional radiotherapy	18	51.1 ± 5.8	4.4 ± 4.1	3.0 ± 3.0	7.3 ± 3.4	9.0 ± 3.7
Systemic chemotherapy	9	48.9 ± 7.4	5.3 ± 1.1	5.5 ± 3.2	10.6 ± 3.2	12.3 ± 4.7
Multimodal treatment	32	47.5 ± 6.5	6.9 ± 1.3	3.8 ± 4.0	11.1 ± 4.9	13.6 ± 5.3
Total	70	49.2 ± 6.7	5.1 ± 2.3	3.9 ± 3.9	9.2 ± 4.8	11.2 ± 5.4
Cancer-related symptoms						
None	51	48.0 ± 7.4	4.9 ± 2.4	3.6 ± 3.2	9.2 ± 5.2	10.8 ± 5.6
Shoulder function impairment	11	51.8 ± 7.4	5.3 ± 2.0	6.4 ± 6.2	11.7 ± 5.3	12.9 ± 5.0
Lymphedema	1	46.4	7.0	4.6	11.6	22.8
Fatigue	9	49.1 ± 7.1	5.9 ± 2.0	2.2 ± 2.1	7.8 ± 2.4	12.1 ± 5.5
Total	72	48.7 ± 7.3	5.1 ± 2.3	3.9 ± 3.9	9.5 ± 5.0	11.4 ± 5.5

^a After diagnosis

Univariate analysis of return to work (RtW) with regard to the type of treatment and cancer-related symptoms identified at the start of return to work. The table shows mean ± standard deviation of age (in years at the time of diagnosis) and the end of treatment, partial RtW and full RtW in months after the first day of sick-leave following early-stage (0 through II) breast cancer. The latent time is the period of time that passed between the end of treatment and partial RtW

Table 3 Multivariate analysis of return to work following early-stage breast cancer

	Partial RtW		Full RtW	
	HR (95% CI)	Wald	HR (95% CI)	Wald
Age	0.97 (0.93–1.02)	1.38	0.98 (0.94–1.03)	0.68
Type of treatment		16.45		15.43
Locoregional radiotherapy	0.51 (0.22–1.16)	2.58	0.63 (0.28–1.41)	1.23
Systemic chemotherapy	0.27 (0.10–0.72)**	6.86	0.31 (0.12–0.81)*	5.73
Multimodal therapy	0.19 (0.08–0.45)**	13.84	0.24 (0.10–0.54)**	11.86
Cancer-related symptoms		6.42		2.38
Shoulder function impairment	0.48 (0.23–0.98)*	4.04	0.63 (0.31–1.26)	1.74
Fatigue	1.67 (0.76–3.64)	1.65	0.79 (0.37–1.70)	0.37

The results of Cox regression analysis including all prognostic factors of return to work (RtW) after early-stage (0 through II) breast cancer. Age was entered as numerical data and both the type of treatment and cancer-related symptoms were entered as categorical data. The table shows hazard ratios (HR) and their 95% confidence intervals (95% CI), with HR <1 expressing prolonged duration until (partial) work resumption and HR >1 a shorter duration relative to the group without adjuvant treatment (type of treatment) or relative to the group without symptoms (cancer-related symptoms); * $P < 0.05$ and ** $P < 0.01$

did not return to work within two years after diagnosis. Without adjuvant treatment, women returned to work after 7.2 ± 5.2 months. This is nearly two months later than the average 5.4 months reported by Drolet et al. [20, 21]. Patients who received adjuvant treatment were absent from work 7 to 11 months, whereas the contracted hours were reached 9 to 13 months after taking sick-leave.

The majority of women diagnosed with breast cancer undergo intensive treatment, often involving multiple modalities. The results of this study indicated that return to work was particularly delayed by the type of treatment. The strong relation between treatment modalities and the length of sick-leave was reported before [6, 7]. We found

that work resumption was most postponed by multimodal therapy, including radiotherapy and chemotherapy. Radiotherapy was performed every week day continuing for a period of five weeks. The daily treatment interfered with work in all cases. Patient-related factors obstructing work during chemotherapy were the side effects, the emotional burden of treatment, and the changed attitude towards work as patients were preoccupied with their disease at that moment. Besides, we hypothesize that occupational physicians as well as employers and co-workers do not think it proper for cancer patients to work during therapy. In our study population, only two patients worked between rounds of chemotherapy. Future research

should investigate these contexts opposing work resumption. It would also be interesting to study the effects of different types of chemotherapy on return to work.

Fatigue is one of the most distressing and debilitating symptoms reported by cancer survivors. De Jong et al. evaluated the prevalence and course of fatigue in patients with breast cancer [22]. Women who underwent radical mastectomy were more fatigued than those who underwent lumpectomy. Radiotherapy and chemotherapy were also associated with fatigue. The prevalence of fatigue increased significantly after the start of chemotherapy with a different impact of the type of chemotherapy [23]. In the doxorubicin group a direct increase in fatigue was found, whereas in the group treated with cyclophosphamide, methotrexate, and 5-fluorouracil (CMF) a moderate direct increase occurred, followed by a delayed strong increase. High rates of fatigue were not only reported during treatment but also afterwards. Pain, impaired quality of sleep, and depression were highly consistent with fatigue, although it is not clear whether it is these symptoms that cause fatigue or vice versa. Fatigue scores were associated with a decrease in daily functioning and were found to be strongly related to the time taken to resume work [17]. In our study, fatigue was mentioned by 9 patients (13%), particularly those who received multimodal treatment. It has been reported that fatigue is a persistent problem for 25% of disease-free breast cancer patients during a 2-year period [24]. The lower prevalence of fatigue in our study means that either patients did not mention fatigue or the occupational physician did not inquire about it. The time taken to return to work was not longer in patients reporting fatigue than in those without complaints.

Hayes et al. [25] studied upper body functioning in a population-based sample of 214 women. They found evidence for impaired upper body flexibility following radiation treatment. Further analysis identified five distinct task groups to be most burdensome, specifically whole body function, flexibility, carrying/upper-body strength, hand and weighted flexion tasks [26]. Rietman et al. reported that axillary radiation predicted an additional decrease in the range of motion of the shoulder [27]. They found an impaired range of motion in 9–16% of 55 patients who underwent a modified radical mastectomy or a segmental mastectomy with axillary lymph node dissection [28]. In our study, shoulder function impairment was found in 11 patients (15%), particularly in those who received radiotherapy or multimodal treatment. Their partial return to work was significantly delayed relative to patients without complaints. Patients with shoulder function impairment resumed their work about two months later than those without complaints.

The results of this study could have been biased by the selection of 72 out of 154 patients and by their allocation to rather small therapy groups which was not random but

according to Dutch treatment guidelines [29]. The patients who were included in analysis were older than those who were excluded, but our results showed that age was not a significant determinant of return to work following early-stage breast cancer. The included patients worked less hours per week and were employed for a longer time than those excluded. Both factors might facilitate return to work and herewith underestimate the duration of sickness absence due to early-stage breast cancer. The excluded patients were longer absent indeed, but this might also be the result of more advanced breast cancer or the presence of another disease (co-morbidity).

A major limitation of the study is the validity of the cancer-related symptoms. For this study we retrospectively reviewed the medical files of patients. Arm symptoms and fatigue were dichotomized as being documented in the medical file or not. When prominent, the symptoms will have been mentioned by the patient and documented in her medical file. Self-reported “heaviness in the arm in the past year” and “swelling now” was found to be predictive of lymphedema [30]. But it is not known whether occupational physicians specifically asked for cancer-related symptoms, or which symptoms the patients were inquired about. Verbeek et al. interviewed one hundred occupational physicians of a cohort of cancer survivors about return to work management [31]. For knowledge of cancer and treatment, only 3% of them had optimal performance. They concluded that the quality of occupational rehabilitation of cancer survivors can be improved, especially with regard to communication with treating physicians.

Although exploratory, this study showed that treatment and to a lesser extent arm symptoms interfered with work resumption after early-stage breast cancer. For practice, this means that occupational physicians should be better educated about topical cancer treatments, the side-effects, and cancer-related symptoms. Moreover, the use of validated measures to quantify arm symptoms in breast cancer survivors should be encouraged, as well as examination of other cancer-related symptoms such as sleeping problems, distress, and depressed mood. Although severely affecting the quality of life of patients, these symptoms are often neglected by treating physicians. The occupational physician could advise patients on coping with these symptoms or refer them to specific interventions. Gradual occupational rehabilitation in suitable work could help cancer survivors to regain self-confidence in their capacities and improve quality of life.

This study investigated cancer-related factors, but more research is also needed on work-related factors affecting return to work after cancer. Providing patients with an educational leaflet on work resumption had no effect on return to work [32]. The occupational physician could play

a key role in workplace education about cancer, in order to create a supportive work environment preventing co-worker and supervisor ignorance from making the patient's work resumption more stressful.

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References

- Bradley CJ, Bednarek HL, Neumark D. Breast cancer and women's labor supply. *Health Serv Res.* 2002;37:1309–28.
- Bloom JR, Stewart SL, Chang S, Banks PJ. Then and now: quality of life of young breast cancer survivors. *Psychooncology.* 2004;13:147–60.
- Maunsell E, Drolet M, Brisson J, Brisson C, Masse B, Deschenes L. Work situation after breast cancer: results from a population based study. *J Natl Cancer Inst.* 2004;96:1813–22.
- Van der Wouden J, Greaves-Otte J, Greaves J, Kruij P, Van Leeuwen O, Van der Does E. Occupational reintegration of long-term cancer survivors. *J Occup Med.* 1992;34:1084–9.
- Kagawa-Singer M. Redefining health: living with cancer. *Soc Sci Med.* 1993;37:295–304.
- Farley Short P, Vasey J, Tunceli K. Employment pathways in a large cohort of adult cancer survivors. *Cancer.* 2005;103:1292–301.
- Bradley C, Oberst K, Schenk M. Absenteeism from work: The experience of employed breast and prostate cancer patients in the months following diagnosis. *Psychooncology.* 2006;15:739–47.
- Spelten ER, Sprangers MAG, Verbeek JHAM. Factors reported to influence return to work of cancer survivors: a literature review. *Psychooncology.* 2002;11:124–31.
- Maunsell E, Brisson C, Dubois L, Lauzier S, Fraser A. Work problems after breast cancer: an exploratory qualitative study. *Psychooncology.* 1999;8:467–73.
- Amir Z, Moran T, Walsh L, Iddenden R, Luker K. Return to paid work after cancer: A British experience. *J Cancer Surviv.* 2007;1:129–36.
- Nachreiner NM, Dagher RK, McGovern PM, Baker BA, Alexander BH, Gerberich SG. Successful return to work for cancer survivors. *AAOHN J.* 2007;55:290–5.
- Pryce J, Munir F, Haslam C. Cancer survivorship and work: symptoms, supervisor response, co-worker disclosure and work adjustment. *J Occup Rehabil.* 2007;17:83–92.
- Janz NK, Mujahid M, Chung LK, Lantz PM, Hawley ST, Morrow M, et al. Symptom experience and quality of life of women following breast cancer treatment. *J Womens Health.* 2007;16:1348–61.
- Sakorafas GH, Peros G, Cataliotti L. Sequelae following axillary lymph node dissection for breast cancer. *Expert Rev Anticancer Ther.* 2006;6:1629–38.
- Sakorafas GH, Peros G, Cataliotti L, Vlastos G. Lymphedema following axillary lymph node dissection for breast cancer. *Surg Oncol.* 2006;15:153–65.
- Bower JE, Ganz PA, Desmond KA, Rowland JH, Meyerowitz BE, Berlin TR. Fatigue in breast cancer survivors: occurrence, correlates, and impact on quality of life. *Clin Oncol.* 2000;18:743–53.
- Arndt V, Stegmaier C, Ziegler H, Brenner H. A population-based study of the impact of specific symptoms on the quality of life in women with breast cancer 1 year after diagnosis. *Cancer.* 2006;107:2496–503.
- Meeske K, Smith AW, Alfano CM, McGregor BA, McTiernan A, Baumgartner KB, et al. Fatigue in breast cancer survivors two to five years post diagnosis: a HEAL Study report. *Qual Life Res.* 2007;16:947–60.
- Spelten ER, Verbeek JAHM, Uitterhoeve ALJ, Ansink AC, van der Lelie J, de Rijke TM, et al. Cancer, fatigue and the return of patients to work—a prospective cohort study. *Eur J Cancer.* 2003;39:1562–7.
- Drolet M, Maunsell E, Mondor M, Brisson C, Brisson J, Masse B, et al. Work absence after breast cancer diagnosis: a population-based study. *CMAJ.* 2005;173:765–71.
- Drolet M, Maunsell E, Brisson J, Brisson C, Masse B, Dechênes L. Not working 3 years after breast cancer: predictors in a population-based study. *J Clin Oncol.* 2005;23:8305–12.
- De Jong N, Courtens AM, Abu-Saad HH, Schouten HC. Fatigue in patients with breast cancer receiving adjuvant chemotherapy: a review of literature. *Cancer Nurs.* 2002;25:283–97.
- De Jong N, Candel MJ, Schouten HC, Abu-Saad HH, Courtens AM. Prevalence and cause of fatigue in breast cancer patients receiving adjuvant chemotherapy. *Ann Oncol.* 2004;15:896–905.
- Servaes P, Gielissen MF, Verhagen S, Bleijenberg G. The course of severe fatigue in disease-free breast cancer patients: a longitudinal study. *Psychooncology.* 2007;16:787–95.
- Hayes S, Battistutta D, Newman B. Objective and subjective upper body function six months following diagnosis of breast cancer. *Breast Cancer Res Treat.* 2005;94:1–10.
- Hayes S, Battistutta D, Parker AW, Hirst C, Newman B. Assessing task “burden” of daily activities requiring upper body function among women following breast cancer treatment. *Support Care Cancer.* 2005;13:255–65.
- Rietman JS, Geertzen JH, Hoekstra HJ, Baas P, Dolsma WV, de Vries J, et al. Long term treatment related upper limb morbidity and quality of life after sentinel lymph node biopsy for stage I or II breast cancer. *Eur J Surg Oncol.* 2006;32:148–52.
- Rietman JS, Dijkstra PU, Debreczeni R, Geertzen JH, Robinson DP, de Vries J. Impairments, disabilities and health related quality of life after treatment for breast cancer: a follow-up study 2.7 years after surgery. *Disabil Rehabil.* 2004;26:78–84.
- Dutch Study Group for the Treatment of Breast Cancer. Treatment of breast cancer treatment, Alphen aan den Rijn: Van Zuiden Communications B.V.; 2005 [in Dutch].
- Armer JM, Radina ME, Porock D, Culbertson MD. Predicting breast-cancer related lymphedema using self-reported symptoms. *Nurs Res.* 2003;52:370–9.
- Verbeek J, Spelten E, Kammeijer M, Sprangers M. Return to work of cancer survivors: a prospective cohort study into the quality of rehabilitation by occupational physicians. *Occup Environ Med.* 2003;60:352–7.
- Nieuwenhuijsen K, Bos-Ransdorp B, Uitterhoeve LL, Sprangers MA, Verbeek JH. Enhanced provider communication and patient education regarding return to work in cancer survivors following curative treatment: a pilot study. *J Occup Rehabil.* 2006;16:647–57.